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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/585,472	06/02/2000	Michiaki Sakamoto	157330/99	6609
21254	7590	10/23/2006	EXAMINER	
MCGINN INTELLECTUAL PROPERTY LAW GROUP, PLLC 8321 OLD COURTHOUSE ROAD SUITE 200 VIENNA, VA 22182-3817			RUDE, TIMOTHY L	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 10/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/585,472

Applicant(s)

SAKAMOTO, MICHIAKI

Examiner

Timothy L. Rude

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-12,15-18 and 21-32 is/are pending in the application.
- 4a) Of the above claim(s) 2,6-12,15-18,21-23 and 26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,5,24 and 25 is/are rejected.
- 7) ☒ Claim(s) 27-32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 29 May 2006 and 27 July 2006 has been entered.

Claims

1. Claims 1 is amended. Claims 27-32 are added.

Election/Restrictions

2. It is noted that Applicant has not traversed withdrawal of claim 26, drawn to a non-elected species. Examiner acknowledges Applicant's contention that claim 1 is generic.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

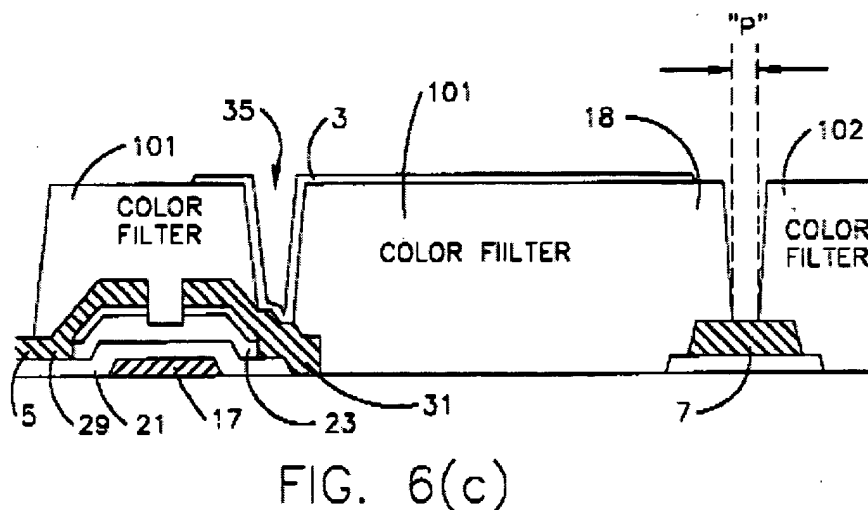
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhong et al (Zhong) USPAT 5,994,721 in view of Ohta et al (Ohta) USPAT 6,208,399 B1.

As to claim 1, Zhong discloses (entire patent, especially Figures 6(a)-6(c) and 11) an active matrix liquid crystal display device (col. 8, line 22 through col. 11, line 28), comprising: a first substrate, 19, and a second substrate, 51, at least one of said first substrate and said second substrate being transparent; a plurality of scanning lines, 7, formed on said first substrate; a plurality of signal lines, 5, formed on said first substrate crossing said scanning lines in a matrix manner a plurality of thin film transistors, each said thin film transistor respectively formed at an intersection of said scanning lines and said signal lines, each said thin film transistor comprising: a gate electrode, 17, formed on said first substrate; a gate insulation layer, 21, formed on said gate electrode; a semiconductor layer, 23, formed on said gate insulation layer; a drain electrode, 29, formed on a first portion of said semiconductor layer and a first portion of said gate insulation layer; and a source electrode, 31, formed on a second portion of said

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semiconductor layer and a second portion of said gate insulation layer; at least one color filter, 101, formed on said first substrate; a plurality of pixel electrodes, 3, each respectively connected to one of said thin film transistors through a contact hole, 35, and each respectively formed on one of said at least one color filter; a counter electrode, 49, formed on said second substrate; and a liquid crystal layer, 45, between said first substrate and said second substrate, said liquid crystal layer being driven by electric fields between said pixel electrodes and said counter electrode to thereby make a display, wherein said color filter is formed directly on said first substrate (per Figure 6(c)) in substantially all of a light transmission region within a pixel area surrounded by said scanning lines and said signal lines, providing an efficient high aperture display [Abstract, Applicant's a thickness of said color film forming said color filter being a preselected first thickness that provides a sufficient chromaticity for said color filter; please note that the display of Zhong has a preselected first thickness that does provide the color display of Zhong with efficient high aperture display performance, per Zhong], and said color film comprises a stack of layers [stacked on top of transistor layers] that reduces a thickness of material of said color filter near said contact hole such that said second thickness is processed successfully to form a functional contact hole [Applicant's thickness chosen to permit a photo-crosslinkage to occur in an entire thickness of said second thickness of said color filter material during an exposure processing of said contact hole] (per Figure 6(c)).



Zhong does not explicitly disclose a display comprising a passivation film formed on said thin film transistors; at least one color filter additionally covering said passivation film; wherein said passivation film and said color film form a stack of layers that reduces a thickness of material of said color filter near said contact hole such that a portion of said passivation film remains in place adjacent to said contact hole.

Ohta teaches the use of a passivation film exclusively over and in direct physical contact with the TFT portions to protect a back channel portion of the TFT and thereby stabilize a threshold voltage, V_{th} (col. 8, lines 34-67) without warping of the substrate caused by the stress of said passivation layer. Please note that modification of the device of Zhong with the passivation film of Ohta would result in said passivation film and said color film form a stack of layers that reduces a thickness of material of said color filter near said contact hole such that a portion of said passivation film remains in place adjacent to said contact hole.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Zhong with the passivation film exclusively over and in direct physical contact with the TFT portions of Ohta wherein said passivation film and a color film form a stack of layers that reduces a thickness of material of the color filter near said contact hole such that a portion of said

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passivation film remains in place adjacent to said contact hole to protect a back channel portion of the TFT and thereby stabilize a threshold voltage, V_{th} , without warping of the substrate caused by the stress of said passivation layer.

Note: Applicant's newly added intended use limitation "to allow a small dimension for said contact hole formed through said color filter material" is considered met by the structure rejected above. Please note that typical pixel size on most all production LCDs is small, so all the even smaller contact holes for the pixels necessarily have a "small dimension".

As to claims 4 and 5, Zhong in view of Ohta teach the display of claim 1 above.

Zhong in view of Ohta does not teach a color pigment or dye wherein a difference in level generated on a surface of the organic film being not more than $0.3\ \mu\text{m}$

Zhong teaches the use of a color filter, 101, consisting of a photosensitive organic film (resist) with a color pigment or dye (col. 16, lines 43-46) that is substantially flat on the top surface (as illustrated in Figure 6c), therefore a difference in level generated on a surface of the organic film being not more than $0.3\ \mu\text{m}$ as a results effective variable for reducing line-pixel capacitances (Abstract) (MPEP 2144.05 II B).

Zhong is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a difference in level generated on a surface of the organic film being not more than $0.3\ \mu\text{m}$ as a results effective variable for reducing line-pixel capacitances which requires only routine experimentation.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Zhong in view of Ohta by adjusting the difference in level generated on a surface of the organic film per Ohta to be not more than 0.3 μm as a results effective variable for reducing line-pixel capacitances.

4. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhong in view of Ohta, as applied above, and further in view of Sasaki et al (Sasaki) USPAT 6,130,736.

As to claim 25, Zhong in view of Ohta teach the active matrix liquid crystal display device of claim 1.

Zhong in view of Ohta do not explicitly disclose a display wherein said first predetermined thickness is approximately 1.2 μm .

Sasaki teaches the use of a first predetermined thickness that is approximately 1.2 μm [col. 10, lines 26-35] to provide adequate coloration (not too thin) without reducing needed brightness (not too thick).

Sasaki is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to use a first predetermined thickness that is approximately 1.2 μm to provide adequate coloration without reducing needed brightness.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Zhong in view of Ohta with a

first predetermined thickness that is approximately 1.2 μm of Sasaki to provide adequate coloration without reducing needed brightness.

As to claim 24, Zhongin view of Ohta teach the active matrix liquid crystal display device of claim 1.

Zhongin view of Ohta do not explicitly disclose a display wherein said second predetermined thickness being less than approximately 0.4 μm .

Sasaki teaches the use of a first predetermined thickness that is approximately 1.2 μm [col. 10, lines 26-35] to provide adequate coloration (not too thin) without reducing needed brightness (not too thick). Since the second predetermined thickness is necessarily substantially less than the 1.2 μm first predetermined thickness per Zhongin in view of Ohta by an amount approximating the combined thickness of the TFT and protective layer, examiner considers the resulting substantially thinner second predetermined thickness to read on Applicant's claimed "thinner than approximately 0.4 μm ".

Sasaki is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to use a first predetermined thickness that is approximately 1.2 μm , resulting in a second predetermined thickness that is thinner than approximately 0.4 μm , to provide adequate coloration without reducing needed brightness.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Zhongin view of Ohta with a first predetermined thickness that is approximately 1.2 μm , resulting in a second

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predetermined thickness that is thinner than approximately 0.4 μm , of Sasaki to provide adequate coloration without reducing needed brightness.

Allowable Subject Matter

Claims 27-32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

As to claim 27, relevant prior art of record did not disclose, alone or in combination, the active matrix liquid crystal display device as claimed comprising a width dimension of said contact hole is no more than approximately 5 μm .

The closest combination is Zhong et al (Zhong) USPAT 5,994,721 in view of Ohta et al (Ohta) USPAT 6,208,399 B1, but no prior art was found, with proper motivation to combine, to teach the claimed width dimension of said contact hole is no more than approximately 5 μm .

Shimada et al (Shimada) UAPAT 6,147,722 teaches contact holes in the range of 3.5 to 6 μm for use in small display panels for cameras and projectors [col. 18, lines 55-65], but they use a design wherein the contact hole does not penetrate the color filter [key aspect of the present invention]. Shimada is not considered usable as prior art due to a lack of teaching a 5 μm contact hole through a color filter.

Response to Arguments

Applicant's arguments filed on 29 May 2006 and 27 July 2006 have been fully considered but they are not persuasive.

Applicant's ONLY arguments are as follows:

- (1) One would not add a protective layer over the TFT of Zhong.
- (2) Dependent claims are allowable because they directly or indirectly depend from an allowable base claim.

Examiner's responses to Applicant's ONLY arguments are as follows:

(1) It is respectfully pointed out that the superior electrical resistance of Zhong does not read on the protective nature of the passivation layer of Ohta, because the protective property of the layer of Ohta is good diffusion barrier as opposed to good electrical insulation. Examiner has considered Applicant's new arguments and maintains this rejection is proper.

(2) It is respectfully pointed out that in so far as Applicant has not argued rejection(s) of the limitations of dependent claim(s), Applicant has acquiesced said rejection(s).

Examiner remains open minded about the possibility of allowable subject matter in the specification, but the present claims are considered properly rejected above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L. Rude whose telephone number is (571) 272-2301. The examiner can normally be reached on Mon-Thurs.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



tlr

Timothy L Rude
Examiner
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ANDREW SCHECHTER
PRIMARY EXAMINER